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The Impact of Labor Costs on Manufactured Exports in Developing Countries

An Econometric Analysis

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Are labor costs a major factor in the performance of nontraditional exports in developing countries? Yes. So are manufacturing capacity and the price of imported inputs.

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Riveros estimated export supply elasticities in 20 countries on four continents using an empirical model in which manufactured exports are a function of the price of exports, the price of imported inputs, and labor costs relative to the price of home goods. He completed the export supply equation with a variable identifying manufacturing capacity and a variable associated with the role of internal absorption.

After testing for simultaneity, Riveros concluded that half of the countries must be treated as large countries — thus estimating the export supply function through two-stage least squares. He also explored other sources of endogeneity of right-hand side variables — the price of imported inputs, labor costs, and manufacturing capacity. He found that in many

cases the estimates change significantly as a result of this procedure.

Riveros also concludes that expansion of exports is attributable largely to labor costs — defined as wage plus nonwage costs of labor. The role of manufacturing capacity and the price of imported inputs is also statistically significant in most countries. Finally, the negative effect of labor costs on exports is probably linked to the severity with which labor markets are regulated.

In general, the conclusions underscore the impact on exports of domestic economic policies — for example, promoting investment and productive capacity and keeping factor markets free of significant distortions.

This paper is a product of the Macroeconomic Adjustment and Growth Division, Country Economics Department. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Raquel Luz, room N11-061, extension 61762 (44 pages with tables).

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1. Introduction

The role of non-traditional exports, in connection with the debt overhang and the need for sustained growth in developing countries (LDCs), is of paramount importance. A central purpose of export promoting policies in LDCs is developing an efficient domestic industry devoted of non-traditional exports. Accordingly, structural adjustment programs have largely emphasized the use of micro and macro policies to stimulate manufactured exports from LDCs, such as the achievement of real devaluations and deregulation of factor markets.

On the grounds of the standard theory of comparative advantage, low labor costs -- competitive by international standards -- are considered paramount in stimulating non-traditional exports in LDCs. This is the implicit assumption underlying policy reforms seeking structural adjustment, deregulation of the labor market and reduction of total costs. However, although a common policy issue in LDCs, analysis of the existing relationship between non-traditional exports, labor costs and other relevant factors has been based on a lack of empirical evidence. In fact, despite that the empirical knowledge on the connection between factor costs and exports is vital in a policy context, most analyses to date have relied on standard empirical models based on relative product prices and productive capacity. More particularly, given that the social cost of the adjustment is partly reflected in the permanence of low labor costs, analysis of the benefit side -- namely, a sustained export-led growth based on the country's comparative advantages -- becomes crucial to the sustainability of export-oriented adjustment programs.

In this paper we estimate export supply elasticities for 20 developing countries on four continents using an empirical model relying upon export prices, factor costs and productive capacity. The analysis focuses on

manufactured exports -- probably the ones more representative of non-traditional exports and, at the same time, the ones more likely affected by high labor costs and non-wage costs of labor. A statistical test for simultaneity allows us to distinguish between small and large countries in the sample, to estimate the export supply equation accordingly. The likely endogeneity of both factor costs and manufacturing capacity is empirically explored in estimating the model. We conclude that labor costs significantly affect the performance of manufactured exports in most LDCs and that the role of both the manufacturing capacity and the price of imported inputs is also statistically relevant. We also conclude that in many cases the effect of the relative price of exports and the role of internal absorption are statistically unimportant. In examining the effect on exports of the ratio of non-wage costs of labor to per capita income -- a variable taken as a measure of prevailing labor market distortions -- we conclude that it exerts a significant negative effect in only part of our sample. However, we also conclude that the overall regulatory framework characterizing the labor market is probably the more important factor explaining the significance of the effect of non-wage costs of labor on exports.

The organization of the paper is as follows. Section 2 briefly reviews the literature on manufacturing export supply and points out the lack of empirical research with regard to the role of factor costs. Section 3 contains a theoretical discussion of the model, in which manufactured exports depend upon the price of exports, price of nontradables and production factors. Important empirical aspects in connection with the subsequent use of the model are discussed in Section 4, where we also present the results of the statistical tests on the small-country assumption. Section 5 discusses the export supply estimates obtained for individual countries under different

assumptions regarding the exogeneity of right hand side variables. Section 6 presents our pooled cross section-time series analysis, which allowed us to test the significance of a "distortionary" labor cost variable on manufactured exports. Finally, Section 7 summarizes our findings and discusses some guidelines and priorities for future research.

2. Factor Costs and Export Supply in the Literature.

Despite a poor growth performance observed in industrial economies during the 1970s, LDCs' exports continued to grow briskly (Balassa, 1970). In explaining this result, the economic literature during the past decade has provided support to the contention that supply more than demand factors have been crucial in underlying the observed recent performance of LDCs' exports [see, e.g., Balassa (1987), Donges and Riedel (1977), Faini et al (1988), Pritchett (1987), Riedel (1984)]. Furthermore, previous empirical research provided substantiation to the propositions that for most LDCs the demand for manufactured exports is highly price elastic [Moran (1988), Riveros & Mateus (1988)] and that there is a large dispersion in the share of manufactured exports in total exports in LDCs exporting similar products for the same markets [Pritchett (1987), Riveros & Mateus (1988)]. Although these findings would suggest that country-specific factors are key in explaining manufactured exports from LDCs, there is a surprising lack of empirical evidence on their actual importance.

Probably, empirical research in the area of manufactured exports has been hindered by several problems involved in designing and estimating export supply functions. There are three groups of problems usually referred to in the literature:

- (a) The theoretical modeling of export supply often raises controversial issues, particularly in connection with the transparency of its micro-foundations [for a review, see Faini (1986)].

Among the more prominent controversial issues, the use of either partial or general equilibrium models, the definition of the prevailing market structure, the assumed degree of substitution between domestically consumed and exported goods, the treatment given to factor costs and the role taken with regard to relative prices and productive capacity vis-a-vis more 'keynesian' variables like domestic absorption, appear prominently;

- (b) There are numerous reasons to object to the merit of empirical estimates of export supply functions, particularly those based on cross-country analyses. In fact, data on relative prices, trade deflators and productive capacity is usually obtained from very aggregate macro statistics, while data on elements like special export incentives, capital costs, risk and expectations is almost non-existent;

- (c) There are basic econometric problems in estimating an export supply model, namely simultaneity, aggregation biases and endogeneity of explanatory variables, which usually make the empirical evidence highly debatable.

Most empirical studies [for instance, Balassa (1986,1987), Clavijo & Senhadji-Semlali (1987), Goldstein & Kahn (1985), Kahn (1974), Moran (1988)] have adopted a "neoclassical" approach, according to which the supply of manufactured exports is explained on the basis of relative product prices and productive capacity. As discussed by Faini (1985), this follows a certain tradition that attempts to explain both supply and demand purely in terms of

relative prices a la Arrow-Debreu,¹ although some variants consider more "Keynesian" variables, like the role of internal absorption. Nonetheless, empirical models typically seen in the literature correspond to ad-hoc partial equilibrium structures and generally lack a more comprehensive analysis on their supporting theory.

A key aspect discussed in estimating standard export supply models, refers to that of including both export prices and the real exchange rate, usually defined as the price ratio of tradables to non-tradables. Many empirical studies -- like those by Goldstein & Khan (1978), Khan (1974) and Marquez & McNeilly (1986) -- do not include the real exchange rate as a different variable in the estimated supply equations. Others, like those by Moran (1988), Pritchett (1987) and Riveros & Mateus (1988), although considering the effect of both relative export prices and the real exchange rate, have failed in empirically isolating the individual influence of both these variables. One explanation for this result is that there are special export incentives not reflected in prices or in the exchange rate. However, there are also data problems underlying this result, since these estimates are obtained from cross country studies including a fairly large number of countries for which only a rough measuring of the real exchange rate is possible. In contrast, it is interesting to observe that when a more adequate measure of the real effective exchange rate for exports is used -- as in Balassa et al (1986) for Greece and Korea --, and more sophisticated econometric methods are implemented -- as in Riedel (1987) for Hong-Kong and Faini (1988) for Turkey and Morocco --, relative prices prove to be empirically significant in explaining LDCs' exports.

